

Appln. No. 10/822,466
Amendment dated June 30, 2006
Reply to Final Office Action dated January 30, 2006

REMARKS/ARGUMENTS

The foregoing amendments and these remarks are in response to the final Office Action, dated January 30, 2006. At the time of the Office Action, claims 1-28 were pending in the present application. Claims 1, 3 and 7 were rejected under 35 U.S.C. § 102(b). Claims 2, 4-6 and 8-28 were objected to as being dependent upon rejected base claims.

Art-Based Rejections

Claims 1, 3 and 7 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,657,476 to Berg ("Berg")¹. As set forth in the listing of claims, independent claims 1, 3 and 7 have all been amended to clarify that the vane post and the actuation post associated with each vane both extend from the first planar surface of the vane and only the first planar surface of the vane. Thus, no portion of these posts extends from the second planar surface of the vane.

Such a structural relationship is not shown or otherwise disclosed in the Berg reference. The drawing figures of Berg show a boss (68) extending outwardly from one side of the vane (48) -- the bottom (54). A bolt (26), which the Office Action characterizes as being a vane post, extends through the vane (48) such that the bolt (26) extends from both the top (52) and the bottom (54) of the vane (58), which is clearly shown in FIG. 2 of Berg. Accordingly, it cannot be said that Berg discloses a vane post and an actuation post that extend from only one planar surface of the vane.

¹ Claim 7 was indicated as being rejected, but the Examiner only provided a detailed basis for the rejection of claims 1 and 3. No details for the rejection of claim 7 were presented. Therefore, it is not clear whether the Examiner intended to reject claim 7. Nonetheless, claim 7, as amended, distinguishes over the Berg reference for the reasons set forth herein.

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The arrangement of an actuation post (36) and a vane post (28) that extend from only one planar surface of a vane in accordance with aspects of the present invention is significant because it can avoid vane sticking (in which there is a lag in vane movement in response to a user's demand) or vane binding (in which the vane no longer responds to a user's demand). The present specification notes in several places the desire to avoid such problems:

The vanes of the present invention have posts which extend from a planar vane surface and they also receive a post on the same planar vane surface so that the cantilevered loads of the Arnold vanes are avoided. Such vanes are advantageous over previous vanes in that they are less likely to stick even under hundreds of thousands of turbocharger cycles.

Paragraph [0016]

These forces result in a cantilevered load on the vanes which introduce stress in the vanes and the various posts. Over hundreds of thousands of turbocharger cycles, the vanes ultimately become torqued due to the cantilevered loads and hystereis. Over time, the vanes will begin to deform and stick and ultimately break or lock.

Paragraph [0011] (describing the Arnold reference)

The inventors solved the problems of the prior art by redesigning the variable geometry turbocharger components such that the posts that actuate the vanes of a turbocharger may be situated away from the turbine housing and on the same side of the vane, among other improvements.

Paragraph [0013]

Berg is just another example of a prior art system that is susceptible to the very problems that the present invention seeks to avoid. As shown in FIG. 2 of Berg, the bolt (26) -- which the Office Action points to as being the vane post -- extends through the vane (48) and engages the main ring 20 on one end and the frame ring 22 at its other end. In operation, the bolt (26), the main ring (20) and the frame ring (22) are subjected to high temperatures. Each of these parts thermally expands at a different rate, causing relative movement between them. Relative

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movement can lead to the adverse conditions of vane sticking or binding, which, again, are the very problems that the present invention seeks to avoid. By providing the vane post and the actuation post on one and only one side of the vane, the posts of the present invention are thermally decoupled from the turbine housing. As a result, the posts are not subjected to competing thermal forces imposed by the turbine housing, which significantly minimizes the possibility of vane sticking or binding.

For at least the reasons set forth above, it is respectfully submitted that Berg does not teach each and every element of independent claims 1, 3 and 7, and that the rejection of these claims has been overcome.

Allowable Subject Matter

Applicant wishes to thank the Examiner for noting that claims 2, 4-6 and 8-28 are directed to allowable subject matter. In light of the comments above, it is respectfully submitted that the independent claims from which they depend have been distinguished over the cited art. Therefore, it is respectfully submitted that it is not necessary to rewrite these claims in independent form.

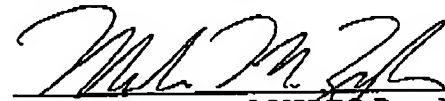
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Conclusion

In light of the above, it is respectfully submitted that the rejections of claims 1, 3 and 7 based on Berg have been overcome. Applicant respectfully requests reconsideration and withdrawal of the rejections of claims 1, 3 and 7 and allowance of pending claims 1-28. A notice to that effect is respectfully requested.

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Respectfully submitted,


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